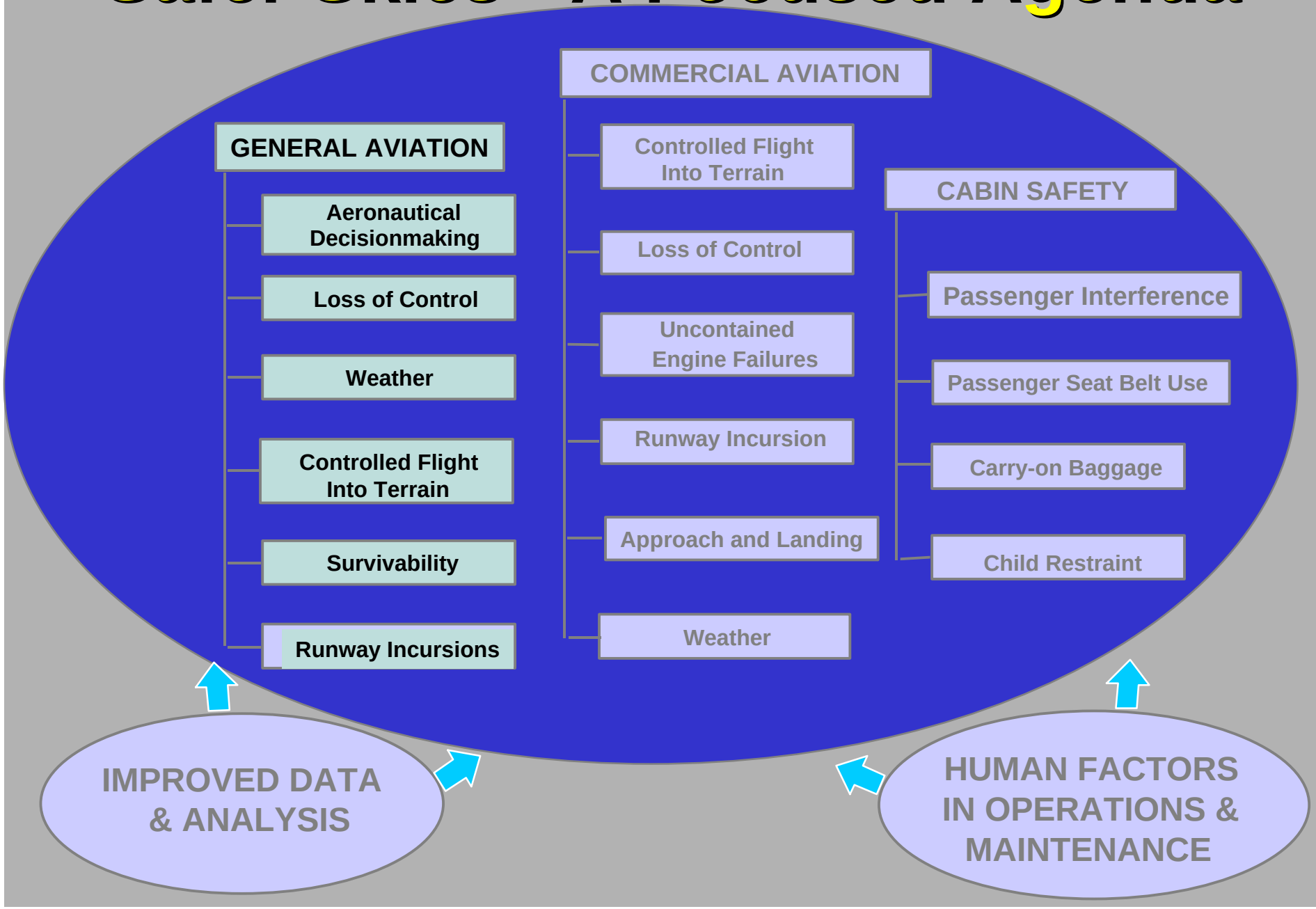
Overview

- **Safer Skies Program Background**
  - Accident Reduction Goals
  - SAT Accident Findings
  - Accident Focus Areas
  - Intervention Development Process
- **GA CFIT and Weather Accident Analysis Results**
- **GA CFIT and Weather team's Intervention Recommendations**
- **Outcomes of Safer Skies**

Safer Skies - Background

- **FAA Administrator, Jane Garvey, announced the "Safer Skies" initiative in April 1998**
- **Safer Skies Transport goal: Reduce fatal accidents 80% over 10 yr. period, 1996 - 2007**
- **Safer Skies GA goal: Reduce total annual fatal accidents from about 400 to 350 over same 10 yr. period**

Safer Skies - A Focused Agenda

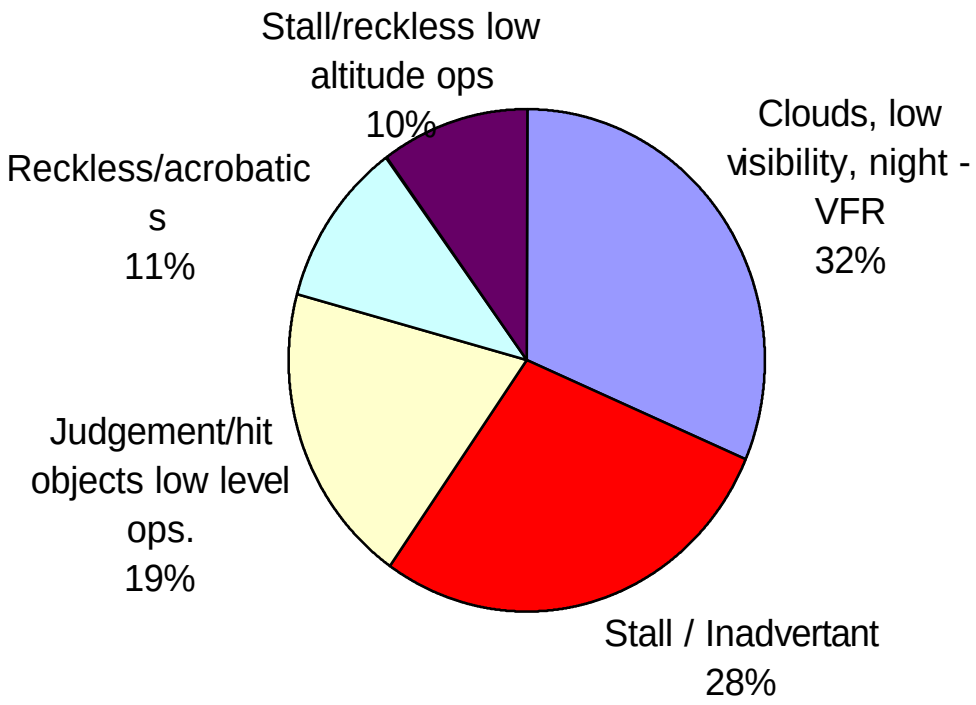


Safer Skies - Background

- **Transport CFIT team was 1st - developed Joint Safety Analysis Team (JSAT) process**
- **CFIT and Weather were 1st GA teams**
- **GA CFIT members included:**

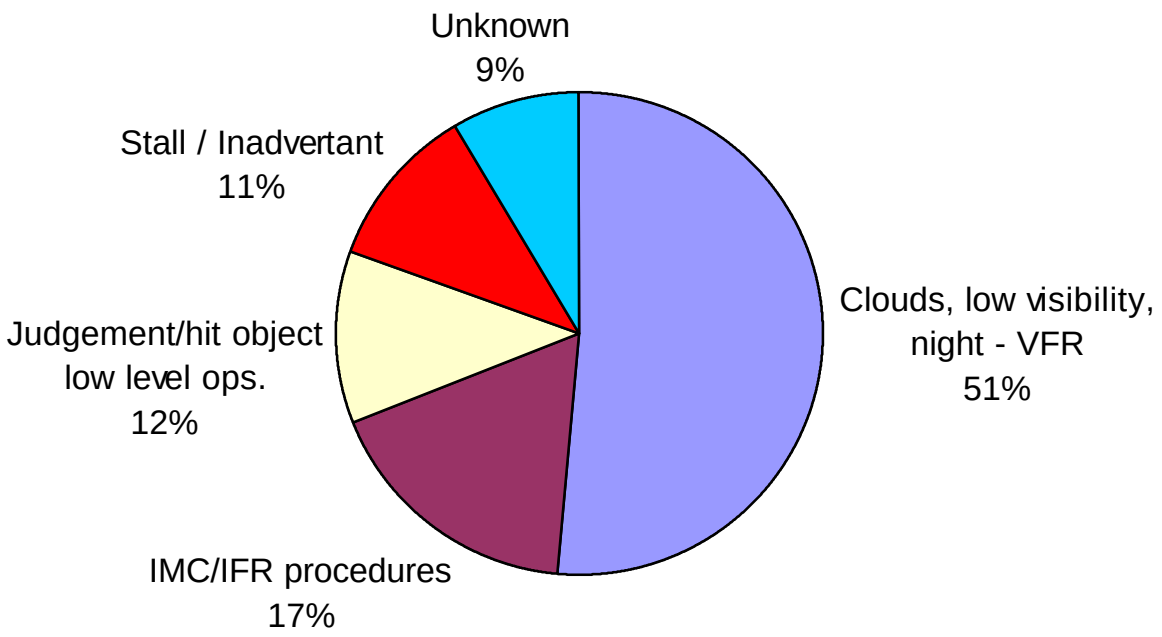
HAI	FAA - AFS
AOPA	FAA - AIR
NATA	FAA - Safety Office
SAMA	Honeywell
FAA - Air Traffic	EAA
NBAA	GAMA

U.S. Top 5 Fixed Gear Fatal Accident Causes



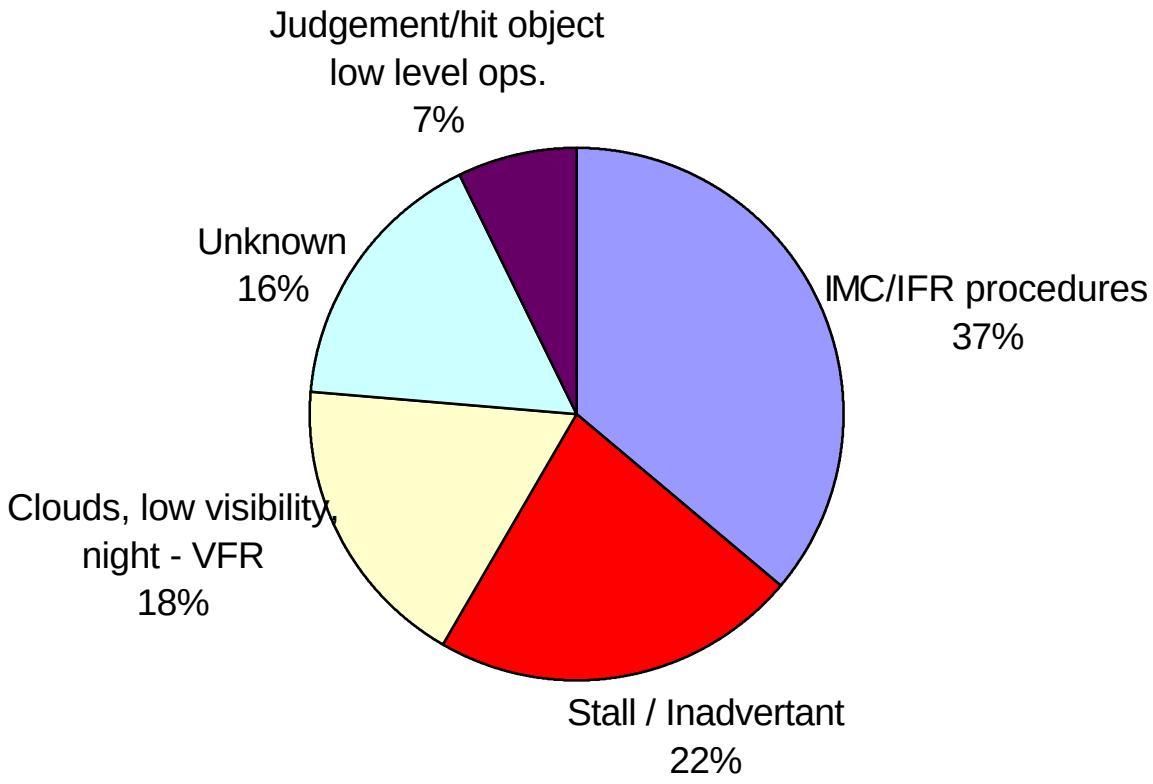
FAA SAT Study 1998

U.S. Top 5 Retractable Gear Fatal Accidents Causes



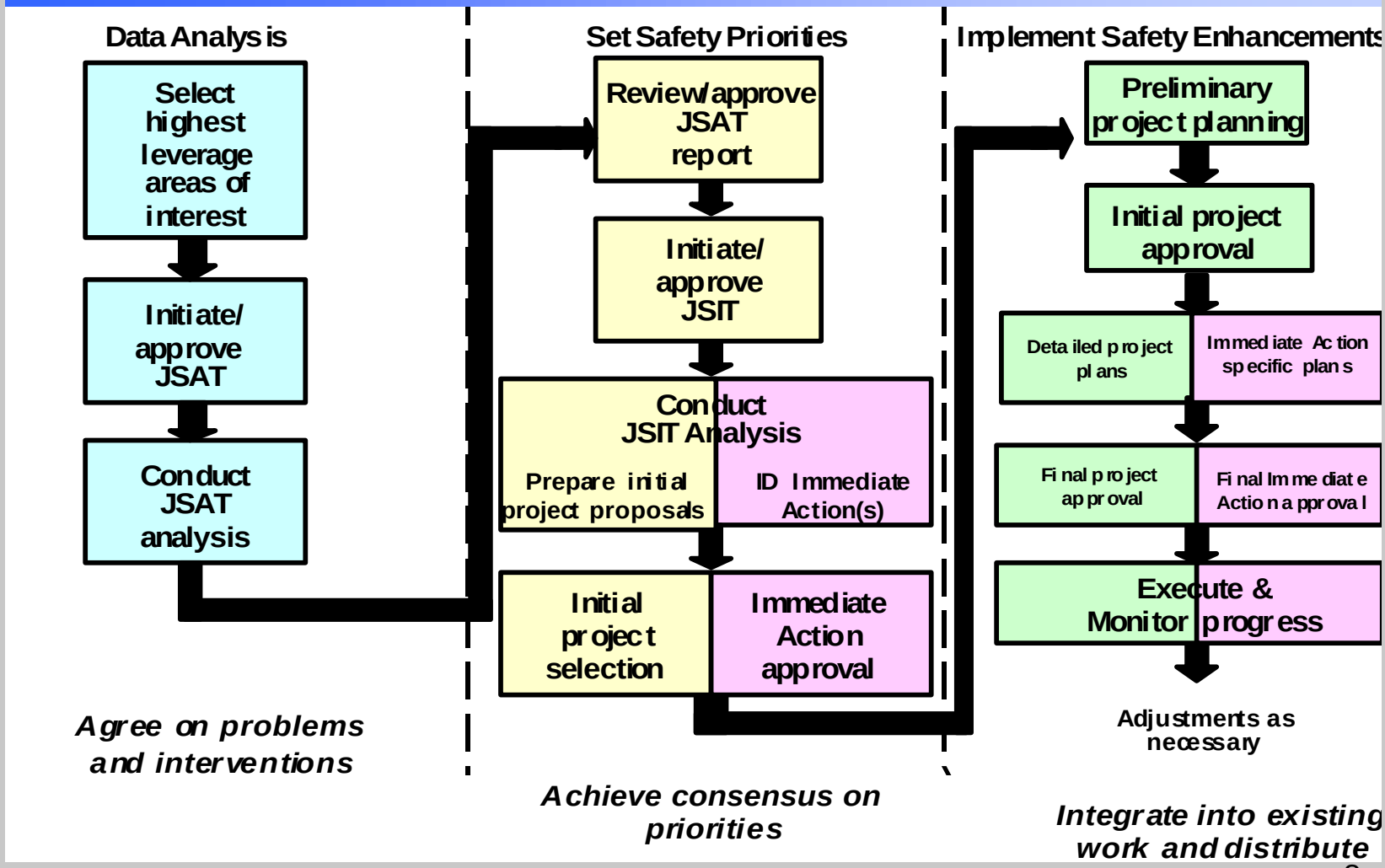
FAA SAT Study 1998

U.S. Top 5 Multi-Engine Fatal Accidents Causes



FAA SAT Study 1998

Process for Defining and Implementing a Data-Driven Safety Enhancement Plan



CFIT Team Accident Findings

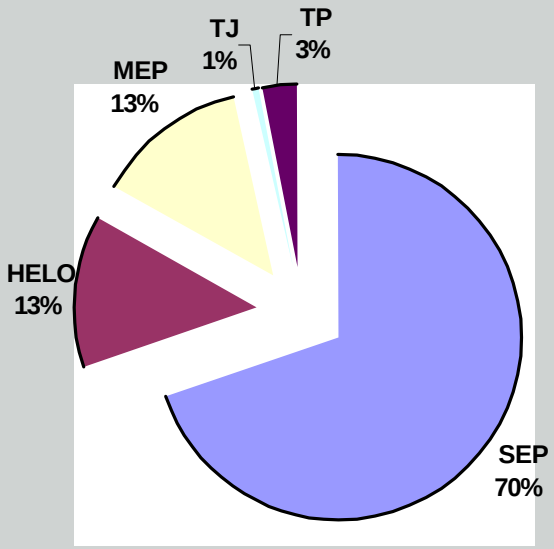
Definition:

A CFIT accident occurs when an airworthy aircraft, under the control of a pilot, is flown into terrain (water or obstacles) with inadequate awareness on the part of the pilot of the impending disaster.

The following charts highlight the findings from a review of 195 CFIT accidents

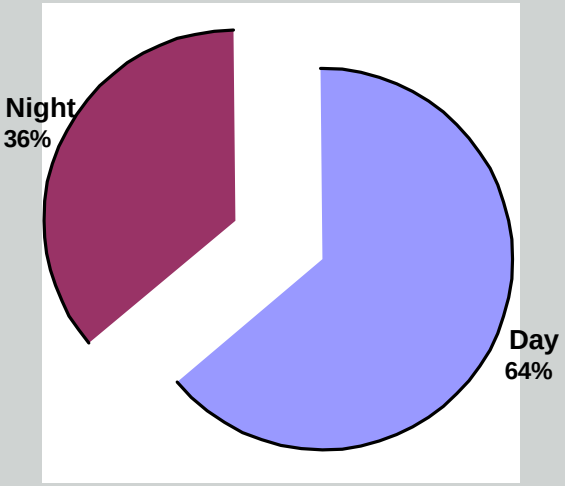
Accident Analysis Results

CFIT Accident Distribution by Type of Aircraft



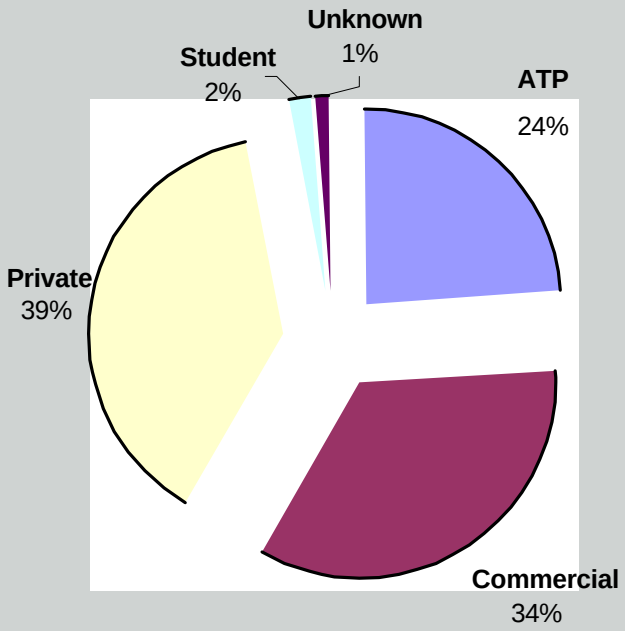
Accident Analysis Results

Day / Night CFIT Accident Distribution



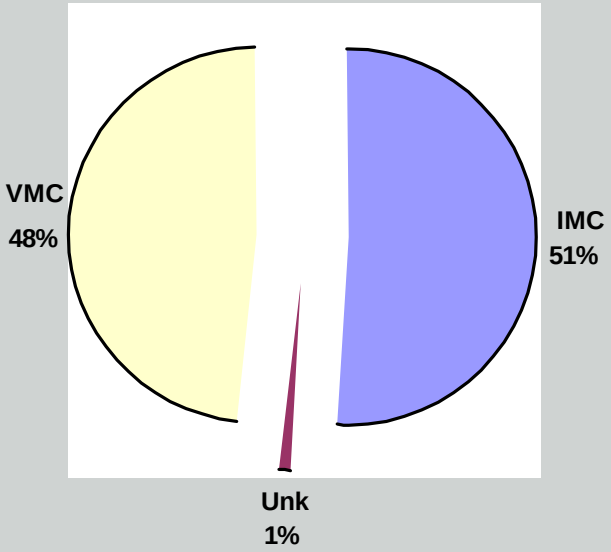
Accident Analysis Results

CFIT Accident Distribution by Certificate Held



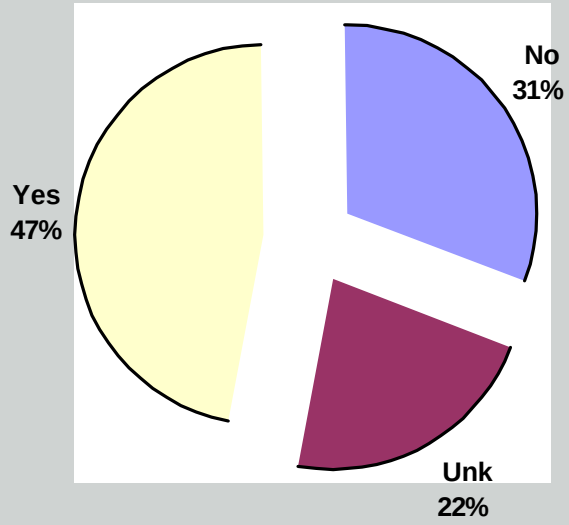
Accident Analysis Results

CFIT Accident Distribution by Weather Condition at Crash Site



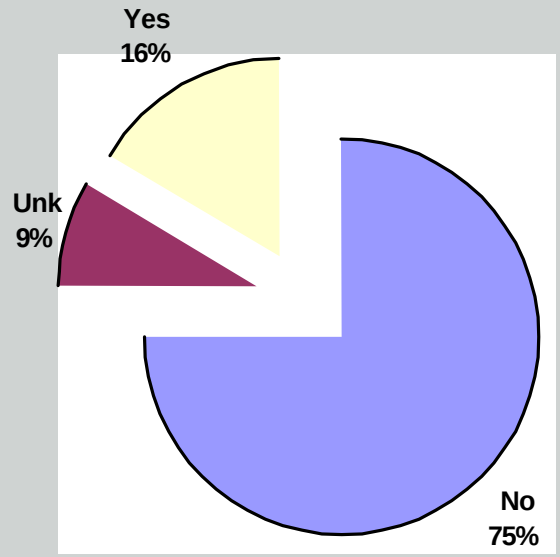
Accident Analysis Results

CFIT Accident Distribution by Official Weather Briefing Received



Accident Analysis Results

CFIT Accident Distribution for Rental Aircraft



CFIT Analysis Findings

- Impacting Terrain
  - Dark night VFR, with or without overcast, flying below peaks
  - Inadvertent VFR into IMC in hilly or mountainous terrain
  - IFR and IMC; usually descending below minimums on approach

CFIT Intervention Recommendations

1. Streamlining Equipment Installation

- Simplified certification and installation guidance
- TSO for low cost, look-ahead terrain warning systems for low-speed GA aircraft
- Higher resolution digital terrain and obstacle database available for public
- Augment development of low cost graphical displays that reduce pilot workload and improve situational awareness (i.e. synthetic vision)

CFIT Intervention Recommendations

2. CFIT Education, Awareness, and Training

- CFIT Awareness and Prevention training
- Formation of a General Aviation Safety Council
- Increased Pilot Awareness on CFIT Accident Causes
- Pilot Risk Analysis and Mitigation Training

CFIT Intervention Recommendations

3. Standardization of Expansion of Requirements for Enhancing the Visibility and Detection of Wires, Support Structures and Towers

- Develop nationally applied standards for visual and/or sensor detection
- Compile obstacle database of wires, towers, support structures, and other similar obstacles 100 ft AGL or higher
- Develop technologies that will enhance both passive detection and sensor detection (cockpit display) of low altitude obstacles

CFIT Intervention Recommendations

4. Routes for GPS Waypoints for Mountain Passes

5. Enhance DUATS to Provide Density Altitude Advisories

Fatal Weather Accidents - Top Ten Factors

- Attempted VFR Flt into deteriorating weather/dark night
- Initiated VFR Flt into IMC(No Instrument Rating or experience)
- Cont. VFR into IMC (No Instrument Rating or experience)
- Attempted VFR under Overcast in Mountain/rising terrain
- Descended below approach minimums (IFR Approach)
- Improper IFR Approach
- Initiated VFR Flt into known IMC
- Continued VFR Flt into known IMC/deteriorating weather
- Initiated IFR flight into adverse Wx/turbulence/Icing/T-storm
- Exceeded design, airframe failure, VFR into IMC, limited instrument experience.

Weather Accident Analysis Findings

- **Pilot:** Inadequate initial and continuing pilot education and formal operational procedures for making weather decisions.
- **Aircraft:** Inadequate weather avoidance and tolerance equipment and performance of most GA aircraft.
- **Information:** Inaccurate, imprecise and untimely information on the location and severity of weather hazard areas.

Weather Accident Analysis Findings

- **Air Traffic Control:** inadequate weather information from controllers and procedures to assist small aircraft in avoiding or coping with weather.
- **Mountain Operations:** Lack of special procedures for mountain operations.
- **Regulations and Enforcement Practices:** That discourage reporting of PIREPs and requests for ATC handling to avoid or exit weather hazards.
- **Rotorcraft and Low Altitude Operations:** Inadequate procedures for safe IFR operations in low altitudes and small airports and heliports.

Weather Intervention Recommendations

Pilot:

- Improve training materials, with updated practical guidance on weather hazard risk assessment, avoidance, and recovery
- Improve flight instructor and pilot continuing education programs on weather hazards and decision making
- Develop a “model” Flight Operations Manual (FOM) for assessing weather risks and avoiding or coping with weather hazards

Weather Intervention Recommendations

Aircraft:

- Improve certification to accelerate the equipage of GA aircraft with low-cost avionics for data-link display of weather graphics
- Develop streamlined approval process to encourage installation of equipment that enables pilots to retain control in IMC and icing
- Increase R&D for on-board systems, such as forward looking icing and turbulence detectors, which help pilots identify and cope with weather hazards

Weather Intervention Recommendations

Information:

- Produce and make operational graphical weather information products that show how and when a flight can be made safely
- Improve the PIREP collection and dissemination system with a common database for controllers, pilots, FSS specialists and dispatchers
- Expedite implementation of the Flight Information Service (FIS) program to provide a national, weather data-link system
- Improve the FSS system, including DUATS, FSS equipment and weather briefings

Weather Intervention Recommendations

Air Traffic Control:

- Improve ATC weather information knowledge and dissemination, and develop new procedures for handling aircraft that are not weather-tolerant
- Implement systems to provide graphical traffic information for use while away from ATC frequency to gather weather information

Weather Intervention Recommendations

Mountain Operations:

- Enhance operational procedures for mountain operations
- Exploit new communication, navigation, and surveillance systems in mountainous areas to improve ability of pilot to fly safety below the freezing level or cloud bases

Weather Intervention Recommendations

Regulations and Enforcement Practices:

- Encourage pilots to make hazardous weather reports (verbal or electronic) by providing immunity from enforcement
- Define use of “VFR not recommended”, and “known and forecast” icing, in ways that are operationally useful to pilots

Weather Intervention Recommendations

Rotorcraft and Low Altitude Operations:

- Facilitate rotorcraft IFR operations by developing low-cost avionics and reducing rotorcraft certification costs
- Create improved terrain and obstruction data for electronic data bases
- Require that obstructions be lighted during low visibility conditions
- Expedite implementation of precision GPS approaches into smaller airports and heliports

Safer Skies - Outcomes

- **Reduces the Number of Fatal Accidents**
- **FAA / DER:** (Aircraft certification issues)
  - Push for new systems and equipment that enhance safety and reduce pilot workload
- **Pilots:** Modified training -- possibility of additional training
- **Aircraft Owners:** Availability of new, low cost equipment

Safer Skies - Conclusion

- **The CFIT and Weather implementation plans should be prioritized and approved by mid-summer**
- **The 1st products for GA from Safer Skies should reach pilots and/or aircraft owners as early as 6 months after project(s) go-ahead**
- **The next safety team, Aeronautical Decision-making, is scheduled to begin work by the 4th quarter of 2000**
- **Runway Incursion JSAT complete - Report in draft**